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Micro-GC
Battery Pack and Charger

User Manual

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Varian Analytical Instrument Warranty

Hardware Products

All analytical instruments sold by Varian are warranted to be free from defects in material and workmanship for the periods specified and in accordance with the terms on the face of Varian's quotation or as otherwise agreed upon in writing between Varian and the Customer. The warranty period begins on the date of **shipment** from Varian to the original Customer. However, where installation is paid for by the Customer or included in the purchase price, the warranty period begins upon completion of installation. If the Customer schedules installation to start later than 30 days after delivery or if such delay is caused through the Customer's inability to provide adequate facilities or utilities or through failure to comply with Varian's reasonable pre-installation instructions or through other omissions by Customer, then the warranty period starts on the 31st day from date of shipment. Moreover Varian will charge the Customer for labor and other expenses involved in making multiple or follow-up installation service calls.

Software Products

Where software is provided within the frame of a license agreement concluded between the Customer and Varian, any warranty shall be strictly in accordance with the terms of such agreement.
In the absence of a license agreement and unless an alternate warranty period is agreed upon in writing between Varian and the Customer, the warranty period is as specified on the face of Varian's quotation. Varian warrants such software products, if used with and properly installed on Varian hardware or other hardware as specified by Varian to perform as described in the accompanying Operator's Manual and to be substantially free of those defects which cause failure to execute respective programming instructions; however, Varian does not warrant uninterrupted or error-free operation.

Remedies

The sole and exclusive remedy under hardware warranty shall be **repair** of instrument malfunctions which in Varian's opinion are due or traceable to defects in original materials or workmanship or, at Varian's option, **replacement** of the respective defective parts, provided that Varian may as an alternative elect to **refund** an equitable portion of the purchase price of the instrument or accessory.
Repair or replacement under warranty does not extend the original warranty period.
Repair or replacement under warranty claims shall be made in Varian's sole discretion either by sending a Customer Support Representative to the site or by authorizing the Customer to return the defective accessory or instrument to Varian or to send it to a designated service facility. The Customer shall be responsible for loss or damage in transit and shall prepay shipping cost. Varian will return the accessory or instrument to the Customer prepaid and insured. Claims for loss or damage in transit shall be filed by the Customer. To correct software operation anomalies, Varian will issue software revisions where such revisions exist and where, in Varian's opinion, this is the most efficient remedy.

Limitation of Warranty

This **warranty does not cover** software supplied by the Customer, equipment and software warranted by another manufacturer or replacement of expendable items and those of limited life, such as but not limited to: Filters, glassware, instrument status lamps, source lamps, septa, columns, fuses, chart paper and ink, nebulizers, flow cells, pistons, seals, fittings, valves, burners, sample tubes, probe inserts, print heads, glass lined tubing, pipe and tube fittings, variable temperature dewars, transfer lines, flexible discs, magnetic tape cassettes, electron multipliers, filaments, vacuum gaskets, seats and all parts exposed to samples and mobile phases.
This **warranty shall be void** in the event of accident, abuse, alteration, misuse, neglect, breakage, improper operation or maintenance, unauthorized or improper modifications or tampering, use in an unsuitable physical environment, use with a marginal power supply or use with other inadequate facilities or utilities. Reasonable care must be used to avoid hazards.
This warranty is expressly in lieu of and excludes all other express or implied warranties, including but not limited to warranties of merchantability and of fitness for particular purpose, use or application, and all other obligations or liabilities on the part of Varian, unless such other warranties, obligations or liabilities are expressly agreed to in writing by Varian.

Limitation of Remedies and Liability

The remedies provided herein are the sole and exclusive remedies of the Customer. In no case will Varian be liable for incidental or consequential damages, loss of use, loss of production or any other loss incurred.

Spare Parts Availability

It is the policy of Varian to provide operational spare parts for any instrument and major accessory for a period of seven (7) years after shipment of the final production run of that instrument. Spare parts will be available after this seven (7) year period but on an *as available* basis. Operational spare parts are defined as those individual electrical or mechanical parts that are susceptible to failure during their normal operation. Examples include relays, lamps, temperature probes, detector elements, motors, etc. Sheet metal parts, structural members or assemblies and castings, printed circuit boards, and functional modules are normally capable of being rebuilt to like-new condition throughout their useful life and therefore will be supplied only on an *as available* basis after the final production run of the instrument.

Service Availability

Varian provides a variety of services to support its customers after warranty expiration. Repair service can be provided by attractively priced service contracts or on a time and material basis. Technical support and training can be provided by qualified personnel on both a contractual or as-needed basis.

Varian Analytical Instruments Sales Offices

For Sales or Service assistance and to order Parts and Supplies, contact your local Varian office.

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VARIAN

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Safety Information

Information

In accordance with Varian's commitment to customer service and safety, this Battery Pack and Charger and its accompanying documentation complies with the Safety, Battery Pack UL2054, UL1015 (cabling) and CE, Charger to CE, and documentation to NEN 5509.

To prevent any injury to the user or any damage to the Battery Pack and Charger it is essential that you read the information in this chapter.

If this manual is not in your native language and if you have problems understanding the text, we advise you to contact your Varian office for assistance. Varian cannot accept responsibility for any damage or injury caused by misunderstanding of the information in this manual.

Operating Instructions

This instruction manual is provided to help you establish operating conditions, which will permit safe and efficient use of your equipment.

Special considerations and precautions are also described in the manual, which appear in the form of **NOTES**, **CAUTIONS**, and **WARNINGS** as described below.
It is important that you operate your equipment in accordance with this instruction manual and any additional information, which may be provided by Varian. Address any questions regarding the safe and proper use of your equipment to your local Varian office.

	Information to aid you in obtaining optimal performance from your instrument.
	Alerts you to situations that may cause moderate injury and/or equipment damage, and how to avoid these situations.
	Alerts you to potentially hazardous situations that could result in serious injury, and how to avoid these situations.

Battery Pack

Introduction

This Battery Pack (Model/partnumber CP740328) must ***only*** be used in combination with the Charger (CP740427). This Battery Pack is tailored to meet the power needs of the Micro-GC (models 490-GC and) CP-4900.

NOTE

For problems or questions about the Battery Pack, please contact your nearest Varian, Inc. subsidiary or Varian, Inc. representative.

General precautions

This battery (Model/partnumber CP740328) is designed for use in combination with the Micro-GC field-case. If the equipment is used in a manner not specified by the manufacturer, the protection provided by the equipment may be impaired.

It is the responsibility of the Customer to inform Varian Customer Support Representatives if this battery has been used in combination with the Micro-GC for the analysis of hazardous biological, radioactive, or toxic samples prior to any instrument service being performed or when an instrument is being returned to the Service Center for repair.

Prohibited Items regarding the Battery Handling

1. The battery should be placed in a suitable location with sufficient ventilation. Space around the battery must be sufficient to enable cooling.
2. Never disassemble a battery as the electrolyte inside is strong alkaline and can damage skin and clothes.
3. Never attempt to short-circuit a battery. Doing so can damage the product and generate heat than can cause burns.
4. Disposing of a battery in fire can cause the battery to rupture. Also avoid placing batteries in water as this causes batteries to cease to function.
5. Never solder anything directly to a battery. This can destroy the safety features of the battery by damaging the safety vent inside the cap.
6. Never reverse charge or overcharge with high currents. Doing so causes rapid gas generation and increased gas pressure, thus causing batteries to swell or rupture.
7. Never insert a battery with the positive and negative poles reversed as this can cause the battery to swell or rupture.
8. Use only the charger (Part number CP740427) that has been supplied by Varian, Inc.
9. Do not use the battery in an appliance or for purposes for which it was not intended.
10. Do not charge the battery if there is a possibility of any kind of electrical damage. Instead, disconnect the power cord and contact your Varian office.
11. Batteries should always be charged prior to use. Be sure to charge correctly.
12. Do not place containers with flammable liquids near the battery. Spillage of the liquid over hot parts may cause fire.

In order to take full advantage of the properties of the Ni-MH Battery Pack and to prevent problems due to improper use, note the following points during use of battery operated products.

Charging

1. **Charge the battery within an ambient temperature range of 0 °C to 40 °C.**
2. Ambient temperature during charging affects charging efficiency. As charging efficiency is best within a temperature range of 10 °C to 30 °C, place the Battery Pack and charger within this temperature range.
3. At temperature below 0 °C the gas absorption reaction is not adequate, causing gas pressure inside the battery to rise, which can activate the safety vent and lead to leakage of alkaline gas and deterioration in performance and battery leakage.
4. Parallel charging of batteries should be avoided.

5. **Never attempt reverse charging. Charging with polarity reversed can cause a gas pressure inside the battery to rise, which can activate the safety vent, lead to alkaline electrolyte leakage, rapid deterioration in battery performance, battery swelling, or battery rupture.**
6. Overcharging should be avoided. Repeated overcharging can lead to deterioration in performance. Overcharging means charging a battery when it is already fully charged.
7. Trickle charging (continuous charging) cannot be used with Ni-MH batteries. To avoid overcharging, a timer measuring the total charge time should be used.

Discharging

1. Discharge the battery within an ambient temperature range of -10 °C to +45 °C

2. Discharge capacity drops at temperatures below -10 °C or above +45 °C. Such decreases in discharge capacity can lead to deterioration in battery performance.

3. **Since over-discharging (deep discharge) damages the battery characteristics do not leave the battery connected to the instrument for long periods of time. Avoid shipping the battery connected with the instrument.**
4. High-current discharging can lead to heat generation and decreased discharging efficiency.

Storage

1. Store battery in a dry location with low humidity, no corrosive gases, and at a temperature range of -20 °C to +45 °C.

2. Storing the battery in a location where humidity is extremely high or where temperatures fall below -10 °C or above +45 °C can lead to rusting of metallic parts and battery leakage due to expansion or contraction in parts composed of organic materials.

3. Long-term storage can accelerate battery self-discharging and lead to the deactivation of reactants; locations where the temperature ranges between +10 °C and +30 °C are suitable for long-term storage.

4. When charging for the first time after long-term storage, deactivation of reactants may lead to increased battery voltage and decreased battery capacity. Restore such batteries to original performance by repeating several cycles of charging and discharging.

5. **When storing batteries for more then one (1) year, charge at least once a year to prevent leakage and deterioration in performance due to self-discharging.**

Service Life Battery

1. Batteries used under proper conditions of charging and discharging can be used 500 cycles or more. Significantly reduced service time in spite of proper charging means that the life of the battery has been exceeded. At the end of service life, an increase in internal resistance or an internal short-circuit failure may occur.

2. Batteries are chemical products involving internal chemical reactions. Performance deteriorates not only with use but also during prolonged storage. Normally, a battery will last two (2) years (or 500 cycles) if used under proper conditions and not overcharged or overdischarged. However, failure to satisfy conditions concerning charging, temperature, and other factors during actual use can lead to shortened life (or cycle life), damage to products, and deterioration in performance due to leakage and shortened service life.

Cleaning instructions

To keep the Battery Pack surface clean, refer to the remarks given below:

- Clean only when Battery Pack is disconnected from the charger.
- Use a soft (no hard or abrasive) brush to carefully brush away all dust and dirt.
- If the outer case is dirty (never clean the inside!) clean it with a soft, clean cloth dampened with mild detergent.
- Never use alcohol or thinners to clean the Battery Pack, these chemicals can damage the case.
- Be careful not to get water on the electronics components.
- Do not use compressed air to clean.

Disposal instructions

When the Battery Pack or parts of it has reached the end of its useful life, disposal must be carried out in accordance with all (environment) regulations applicable in your country.

Technical specifications

Technology	Ni-MH (Nickel Metal Hydride)
Number of cells	10
Cell-orientation	1 x 10 in row
Nominal output voltage	12 Vdc
Capacity	9000 mAh
Protection	Build in Thermo fuse resettable (75 °C) and current (14A)
Output cable	Two wires, UL1015 approved
Output connector	2-circuit JST connector Pin 1 (red) +12V Pin 2 (black) Ground
Operation temperature	0 °C to +45 °C
Charge temperature	0 °C to +40 °C
Storage temperature	-10 °C to +45 °C
Humidity	0 % to 90 % (non-condensing)
Safety	UL2054, UL1015 (cabling) and CE
Size	348 x 71 x 37 mm
Weight	2000 gram

Battery Charger

Introduction

This Charger (Model/partnumber CP740427) must ***only*** be used in combination with the Micro-GC Battery Pack (CP740328). This Charger is tailored to meet the power needs of the Battery Pack.

NOTE

For problems or questions about your Micro-GC Charger, please contact your nearest Varian, Inc. subsidiary or Varian, Inc. representative.

Features

- Micro controller controlled charging
- Test phase at the beginning of the charging in order to recognize and indicate defective Battery Packs.
- Short circuit detection and electronic protection against reversed battery.
- Battery condition at the beginning of the charge is of no importance for the Battery Packs.
- Supervision of the charging condition by a micro controller during the whole charging time.
- Safety stages like voltage gradient supervision and –delta U switch off as well as a safety timer are integrated.
- Possibility of discharging of the Battery Pack before use by pressing a button; after that, automatic switching over to charging.
- State indication through illuminated display.

LEDs

Battery fully charged, trickle charge

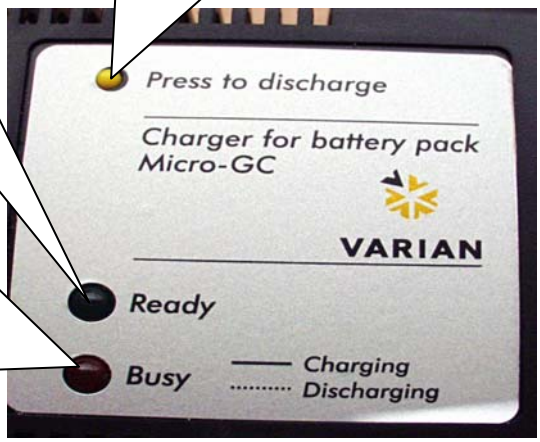
By pressing [for about two (2) seconds] this button, discharging of the battery is started. This procedure should only take place after the test phase!

LED flashing:

1. Good contact during test phase (10 sec.)
2. Battery pack is not connected properly with regards to the polarity.
3. It indicates the defective battery pack or unsuitable number of cells.
4. It indicates the discharging after pressing the PRESS button.

LED permanent:

Battery is charging.



Only charge rechargeable Ni-MH Battery Packs. Using other batteries will cause an explosion hazard.

Keep this charger in a dry place (indoor use only). The charger should be disconnected from the mains when not in use. Do not plug in the charger in case of damaged cabinet or power plug.

Operation

1. Charger will start automatically as soon as a Battery Pack is installed and the charger is plugged into the mains.
2. If the red LED keeps flashing after the test (about 10 seconds), the Battery Pack is not connected properly with regards to the polarity, a defective Battery Pack or an unsuitable number of cells, or indicates discharging after pressing the PRESS button.
3. The test phase is followed by the charging procedure (red LED is permanent on).
4. After the charging procedure, the charger switches automatically over to trickle charge (green LED is flashing, red LED is off).
5. Pressing the PRESS button [about two (2) seconds] will start the discharging procedure; this procedure should only take place after the test phase!
6. After discharging, which can in individual cases last for several hours, the charger automatically switches over to charging.

Cleaning instructions

To keep the charger surface clean, refer to the remarks given below:

- Remove the power cable.
- Use a soft (no hard or abrasive) brush to carefully brush away all dust and dirt.
- If the outer case is dirty (never clean the inside!) clean it with a soft, clean cloth dampened with mild detergent.
- Never use alcohol or thinners to clean the Battery Charge, these chemicals can damage the case.
- Be careful not to get water on the electronics components.
- Do not use compressed air to clean.

Disposal instructions

Disposal must be carried out in accordance with all environment regulations applicable in your country.

Technical specifications

Model	ACS 410P+ traveler
Main voltage	100 – 240 Vac
Frequency	50 – 60 Hz
Power consumption	46 VA
Output Voltage	4.8 - 12 Vdc
Maximum charge current	2500 mA
Output cable	Two wires, 1.7 meter
Output connector	2-circuit Mate-N-lok connector Pin 1 (red) +12V Pin 2 (black) Ground
Humidity	0 % to 90 % (non-condensing)
Safety	CE
Size	150 x 80 x 64 mm
Weight	500 gram